

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 7,101,795 B1  
APPLICATION NO. : 09/678266  
DATED : October 3, 2000  
INVENTOR(S) : Xi et al.

Page 1 of 5

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Title Page, Item (63), Related U.S. Application Data: Please add the following priority data:

--Continuation-in-part of application No. 09/605,593, filed on Jun. 28, 2000,  
now Pat. No. 6,551,929.--

Title Page, Item (56), References Cited, U.S. PATENT DOCUMENTS: Please include the following references:

--6,372,598	4/2002	Kang et al.	438/399
6,369,460	4/2002	Adetutu et al.	257/382
6,368,954	4/2002	Lopatin et al.	438/627
6,358,829	3/2002	Yoon et al.	438/597
6,355,561	3/2002	Sandhu et al.	438/676
6,342,277	1/2002	Sherman	427/562
6,333,260	12/2001	Kwon et al.	438/643
6,284,646	9/2001	Leem	438/629
6,207,487	3/2001	Kim et al.	438/283
6,042,652	3/2000	Hyun et al.	118/719
5,306,666	4/1994	Izumi	437/192
2003/0072975	4/2003	Shero et al.	428/704
2003/0049942	3/2003	Haukka et al.	438/778
6,534,395	3/2003	Werkhoven et al.	438/627
6,482,740	11/2002	Soininen et al.	438/686
6,482,733	11/2002	Raaijmakers et al.	438/633
6,482,262	11/2002	Elers et al.	117/84
6,475,910	11/2002	Sneh	438/685
6,475,276	11/2002	Elers et al.	117/84
6,468,924	10/2002	Lee et al.	438/763
6,451,695	9/2002	Sneh	438/685
6,447,933	9/2002	Wang et al.	428/635
6,423,619	7/2002	Grant et al.	438/589
6,420,189	7/2002	Lopatin	438/2
6,399,491	6/2002	Jeon et al.	438/680
6,391,785	5/2002	Satta et al.	438/704
2003/0032281	2/2003	Werkhoven et al.	438/640
2003/0031807	2/2003	Elers et al.	427/569
2003/0013320	12/2002	Leskela et al.	427/250
2002/0187631	12/2002	Kim et al.	438/637
2002/0187256	12/2002	Elers et al.	427/99

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 7,101,795 B1  
APPLICATION NO. : 09/678266  
DATED : October 3, 2000  
INVENTOR(S) : Xi et al.

Page 2 of 5

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Title Page, Item (56), (cont'd)

2002/0182320	1/2003	Kim et al.	438/778
2002/0162506	11/2002	Sneh et al.	118/715
2002/0155722	10/2002	Satta et al.	438/704
2002/0121697	9/2002	Marsh	257/751
2002/0117399	8/2002	Chen et al.	205/125
2002/0109168	8/2002	Kim et al.	257/295
2002/0106846	8/2002	Seutter et al.	438/200
2002/0105088	8/2002	Yang et al.	257/774
2002/0094689	7/2002	Park	438/694
2002/0090829	7/2002	Sandhu et al.	438/761
2002/0076837	6/2002	Hujanen et al.	438/3
2002/0076507	6/2002	Chiang et al.	427/569
2002/0061612	5/2002	Sandhu et al.	438/151
2002/0055235	5/2002	Agarwal et al.	438/430
2002/0052097	5/2002	Park	438/507
2002/0048880	4/2002	Lee	438/253
2002/0037630	3/2002	Agarwal et al.	438/460
2002/0031618	3/2002	Sherman	427/569
2002/0019121	2/2002	Pyo	438/618
2002/0007790	1/2002	Park	118/715
2002/0004293	1/2002	Soininen et al.	438/584
2002/0000598	1/2002	Kang et al.	257/301
2001/0054769	12/2001	Raaijmakers et al.	257/758
2001/0054730	12/2001	Kim et al.	257/301
2001/0029094	10/2001	Mee-Young et al.	438/597
2001/0028924	10/2001	Sherman	427/255.28
2001/0024387	9/2001	Raaijmakers et al.	356/200
2001/0009695	7/2001	Saanila et al.	427/255.39
2001/0002280	5/2001	Sneh	427/255.28
6,635,965	10/2003	Lee et al.--	

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 7,101,795 B1  
APPLICATION NO. : 09/678266  
DATED : October 3, 2000  
INVENTOR(S) : Xi et al.

Page 3 of 5

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Title Page, Item (56), References Cited, FOREIGN PATENT DOCUMENTS: Please include the following references:

--WO 01/29893	4/2001
WO 01/29891	4/2001
JP 2001/111000	4/2001
WO 02/45167	6/2002
WO 02/067319	8/2002
WO 01/66832	9/2001
EP 1167569	1/2002--

Title Page, Item (56), References Cited, OTHER PUBLICATIONS: Please include the following references:

--Klaus, et al. "Atomically Controlled Growth of Tungsten and Tungsten Nitride Using Sequential Surface Reactions," *Applied Surface Science*, 162-163 (2000) 479-491.

"Pulsed Nucleation for Ultra-High Aspect Ratio Tungsten Plugfill"; San-Hyeob Lee et al.; Materials Research Society, 2002, 649-653.

Yang et al. "Atomic Layer Deposition of Tungsten Film from WF<sub>6</sub>/B<sub>2</sub>H<sub>6</sub>: Nucleation Layer for Advanced Semiconductor Device," Conference Proceedings ULSI XVII (2002) Materials Research Society.--

Column 1, Line 6: Before Background of the Disclosure, insert

--This application is a continuation-in-part of U.S. Patent Application Serial No. 09/605,593, filed June 28, 2000, now issued as U.S. Patent No. 6,551,929.--

Column 5, Line 13: Change "A<sub>ax</sub>" to --Aa<sub>x</sub>--

Column 5, Line 22: Change "to" to --t<sub>1</sub>--

Column 7, Claim 1, Line 34: Before "layer", insert --nucleation layer and a bulk deposition--

Column 7, Claim 1, Line 36: Before "nucleation", insert --refractory metal--

Column 7, Claim 1, Line 38: Delete "atop of said nucleation layer,"

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 7,101,795 B1  
APPLICATION NO. : 09/678266  
DATED : October 3, 2000  
INVENTOR(S) : Xi et al.

Page 4 of 5

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 7, Claim 1, Line 39: Before “employing”, insert --on said nucleation layer by--

Column 7, Claim 1, Line 40: Change “subject said nucleation layer to a bulk deposition of a compound” to --bulk deposit refractory metal--

Column 7, Claim 2, Line 43: Delete “forming atop of said nucleation layer includes forming”

Column 7, Claim 2, Line 45: Before “employing”, insert --is deposited--

Column 7, Claim 3, Line 46: Delete “forming atop of said nucleation layer includes forming”

Column 7, Claim 3, Line 48: Before “employing”, insert --is deposited--

Column 7, Claim 4, Line 50: Delete “introducing said first and second gases therein so as to purge said processing chamber of said first reactive gas by”

Column 8, Claim 4, Line 1: Change “therein,” to --into the processing chamber after exposing said substrate to the first reactive gas and--

Column 8, Claim 6, Line 9: Change “a” to --the refractory metal--

Column 8, Claim 6, Line 10: Before “subsequently”, insert --and--

Column 8, Claim 7, Line 15: Change “a” to --the refractory metal--

Column 8, Claim 9, Line 22: Change “subject” to --subjecting--

Column 8, Claim 10, Line 24: Before “layer”, insert --nucleation layer and a bulk deposition--

Column 8, Claim 10, Line 27: Before “while”, insert --wherein said second reactive gas comprises a refractory metal selected from the group consisting of titanium (Ti) and tungsten (W),--

Column 8, Claim 11, Line 38: Delete “said second reactive gas includes a refractory metal and”

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 7,101,795 B1  
APPLICATION NO. : 09/678266  
DATED : October 3, 2000  
INVENTOR(S) : Xi et al.

Page 5 of 5

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

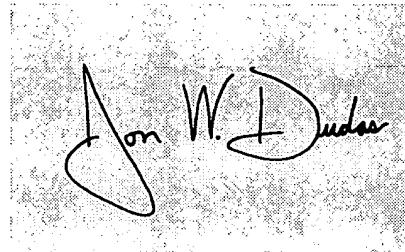
Column 8, Claim 11, Line 40: Change "includes" to --comprises--

Column 8, Claim 12, Line 42: Delete "selected from the group consisting of titanium (Ti) and"

Column 8, Claim 13, Line 46: Delete "first"

Signed and Sealed this

Thirteenth Day of February, 2007

A handwritten signature in black ink, appearing to read "Jon W. Dudas". The signature is somewhat stylized and cursive.

JON W. DUDAS  
*Director of the United States Patent and Trademark Office*